cβ
Iron Dominated Magnets

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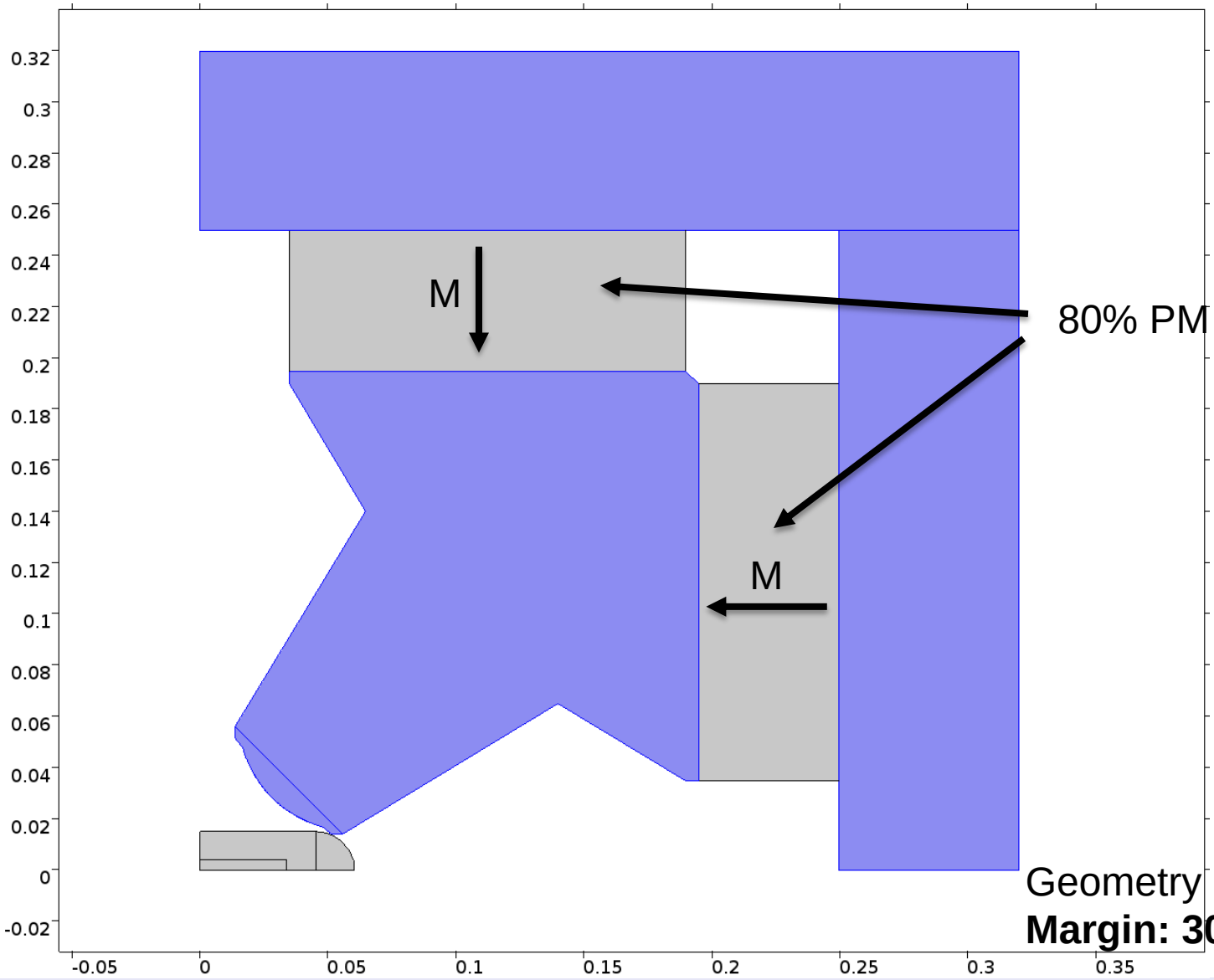
2D Geometry Qf/Qd

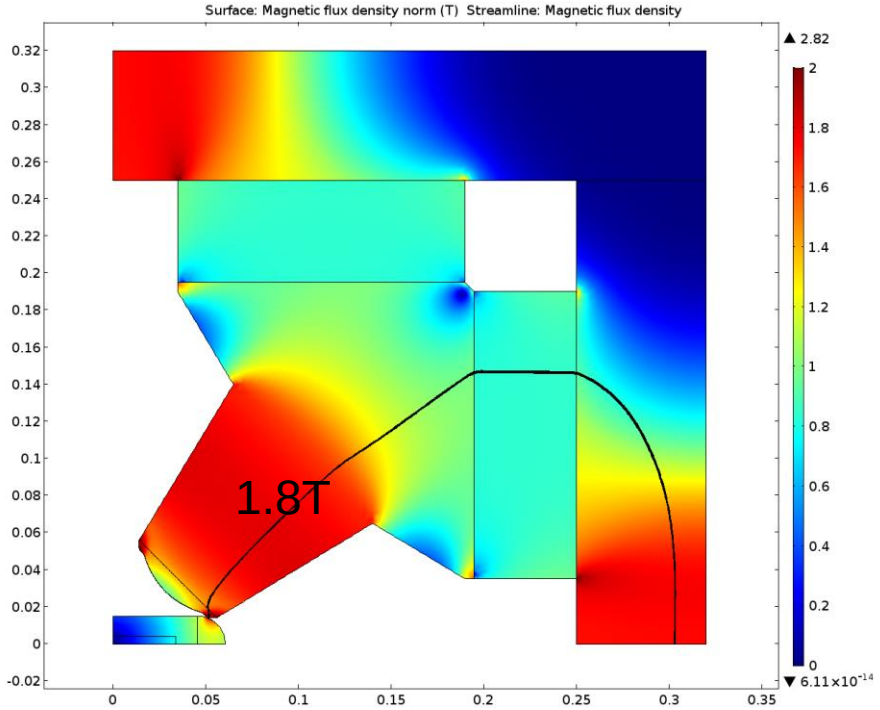


Geometry unchanged

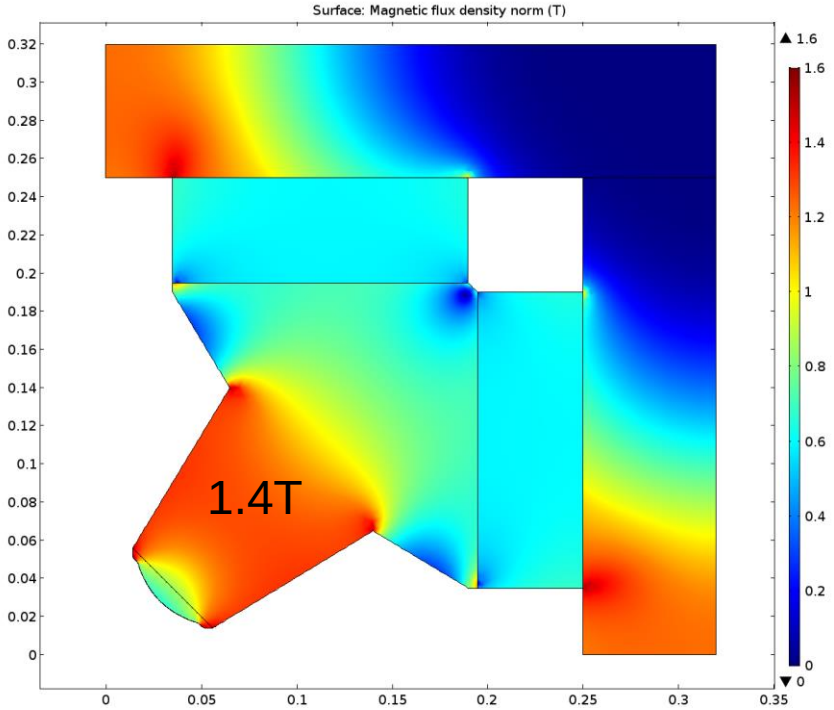
Margin: 30%

Magnetization

200 MeV

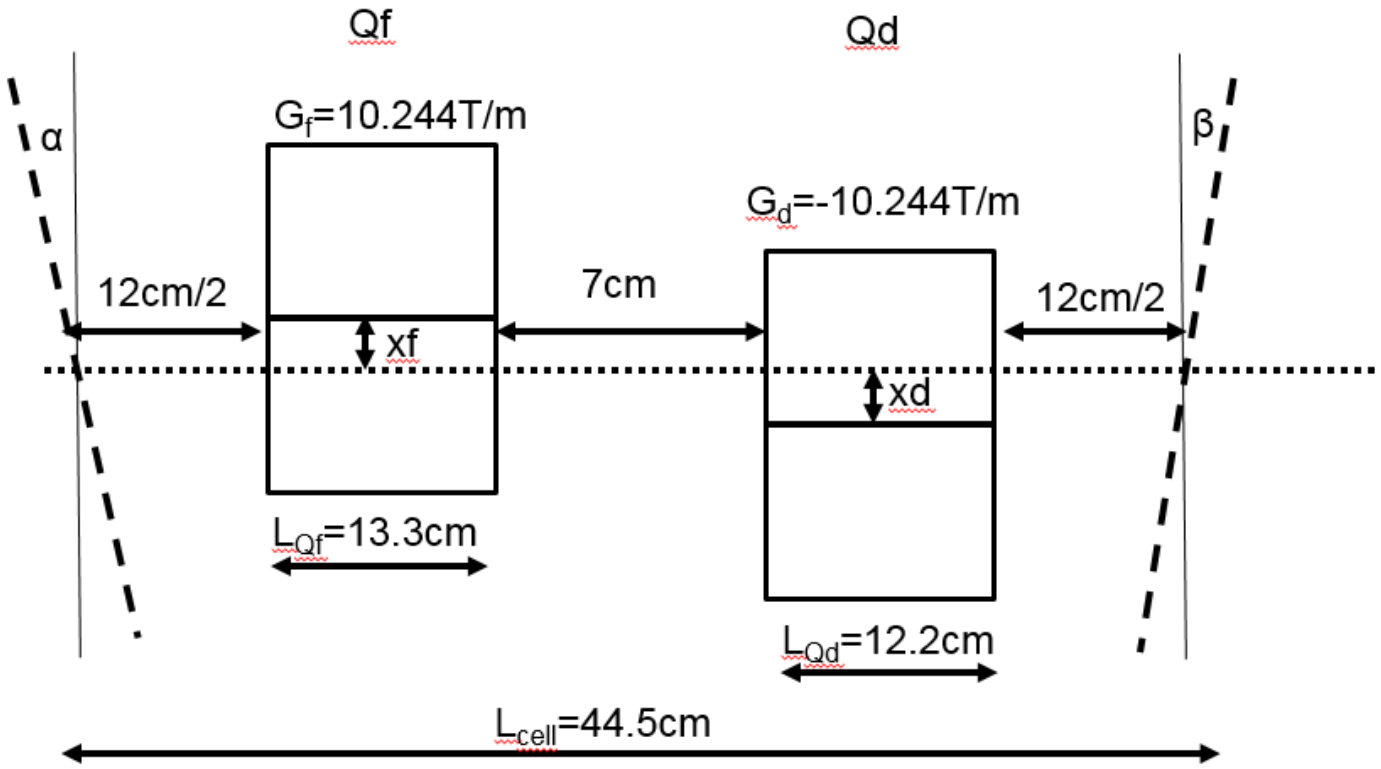


150 MeV



Less stringent requirements on iron

Cell

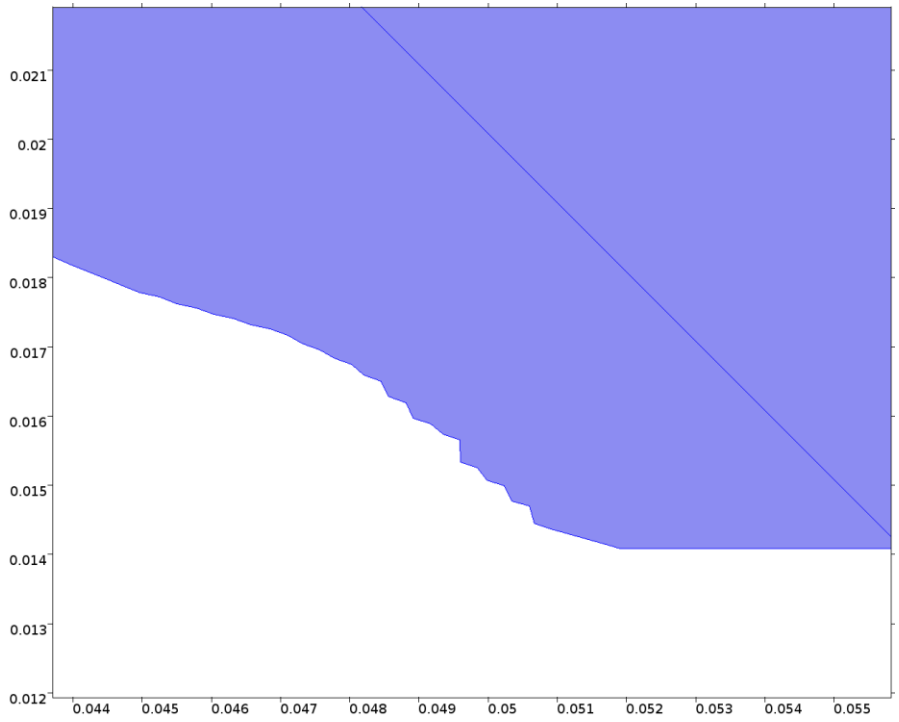


xf = -7.462mm
xd = 20.802mm

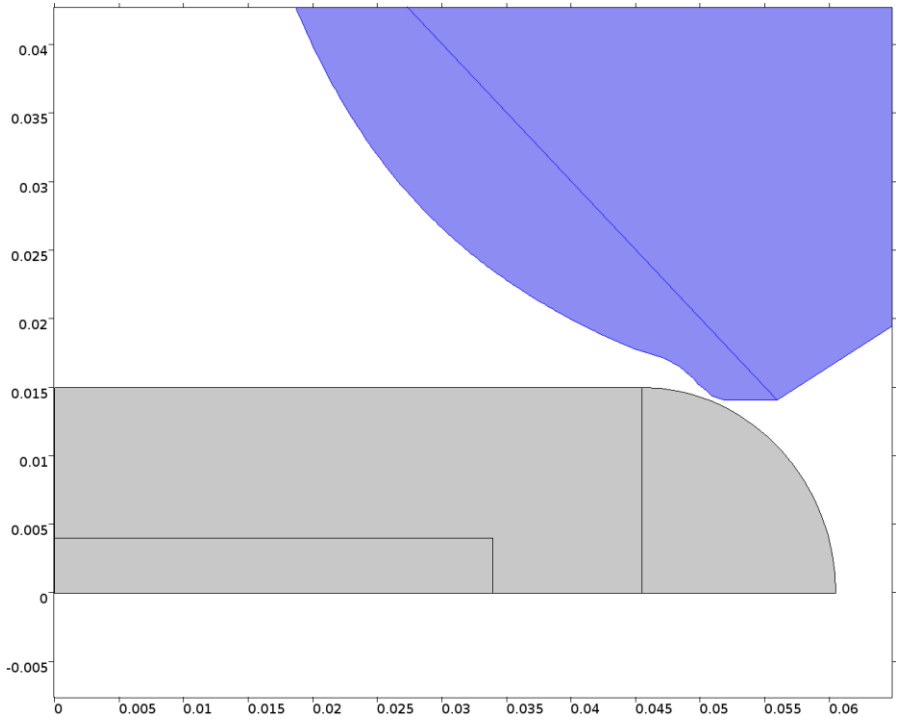
Rotations:
Qf: 1.140°
Qd: -1.0787°
α: 2.562°
β: -2.43822°

Pole Old/New

Old

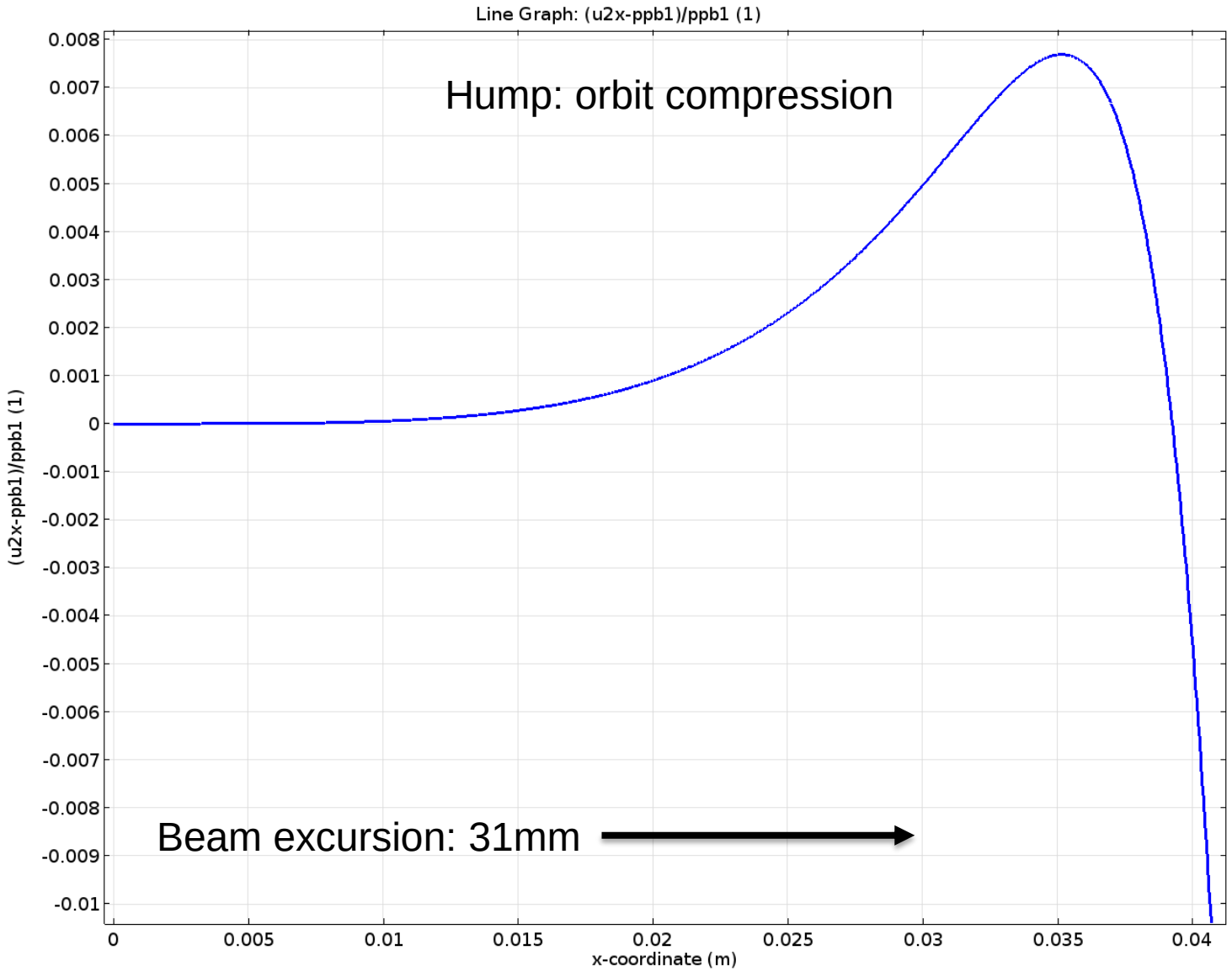


New

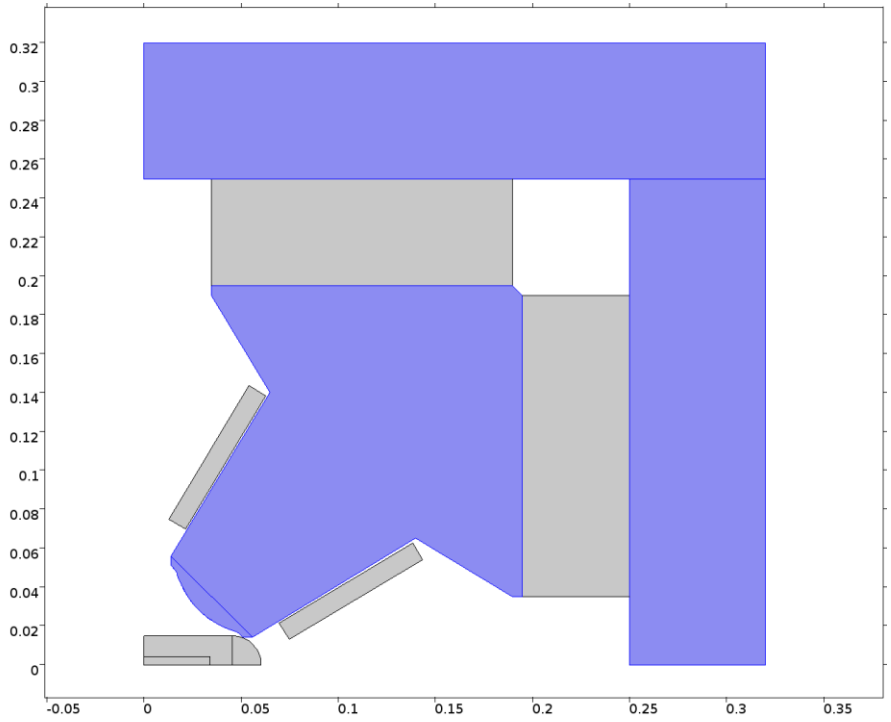


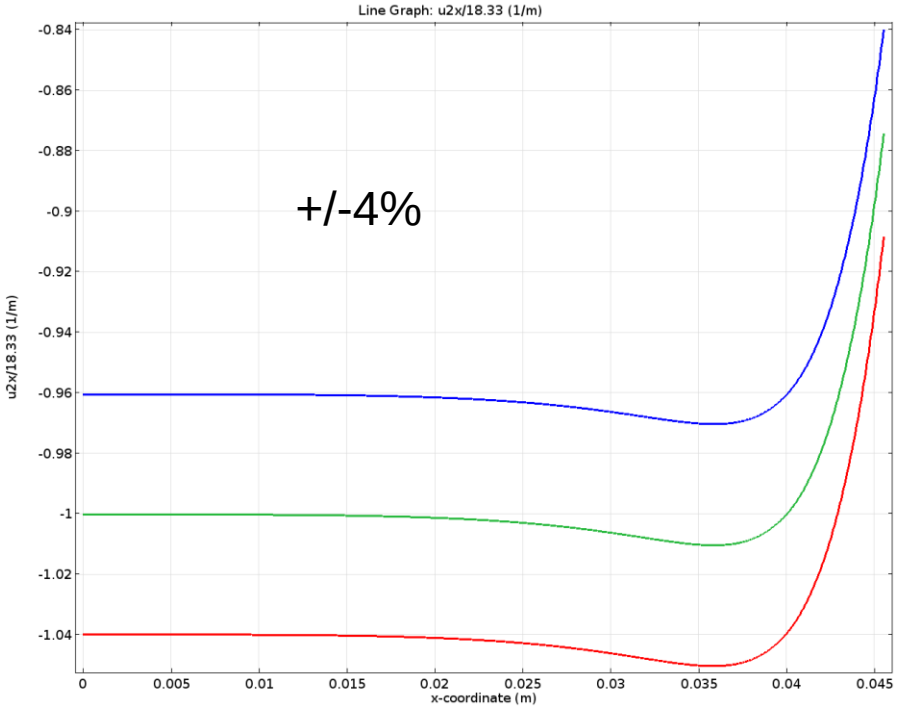
No noticeable change in gradient quality
Pole shape seems very robust

Gradient quality



Quad Corrector

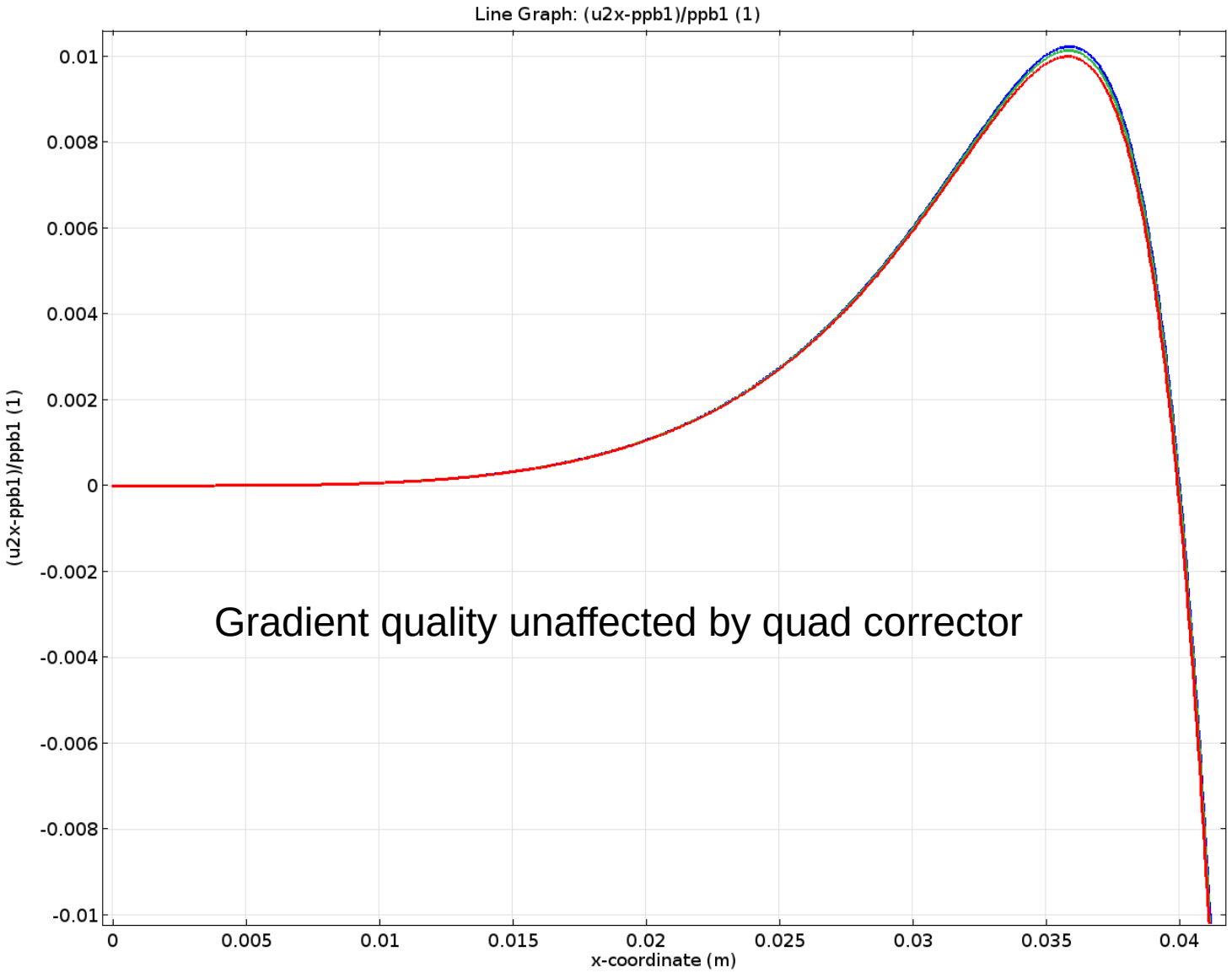




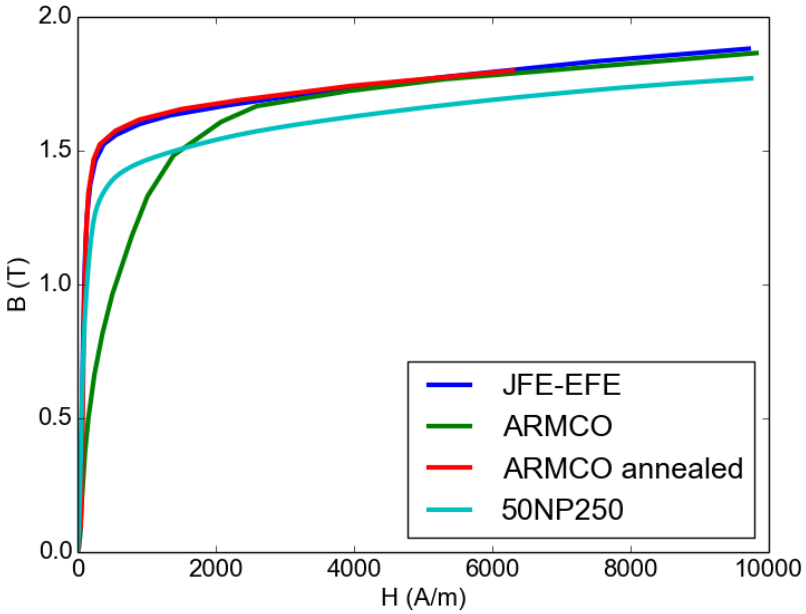
Coil: 8x10mm^2

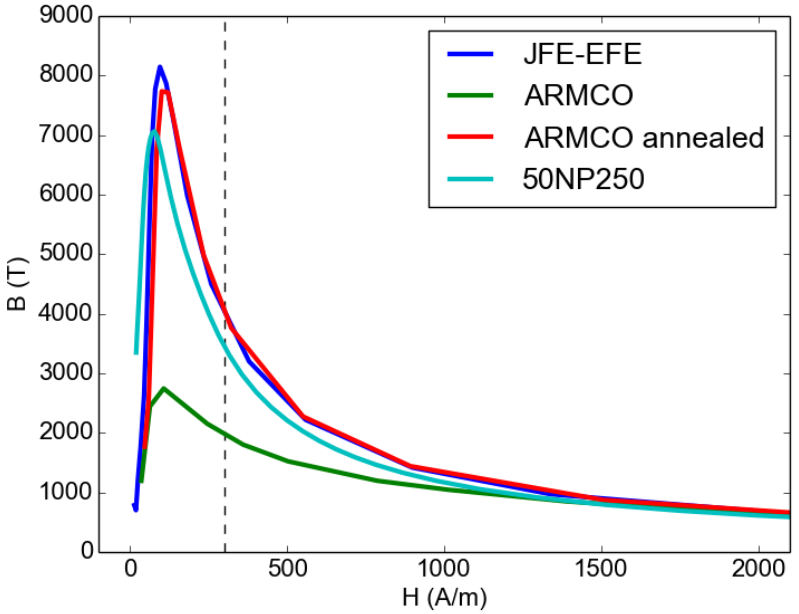
J = 1A/mm^2

Gradient Quality



Iron

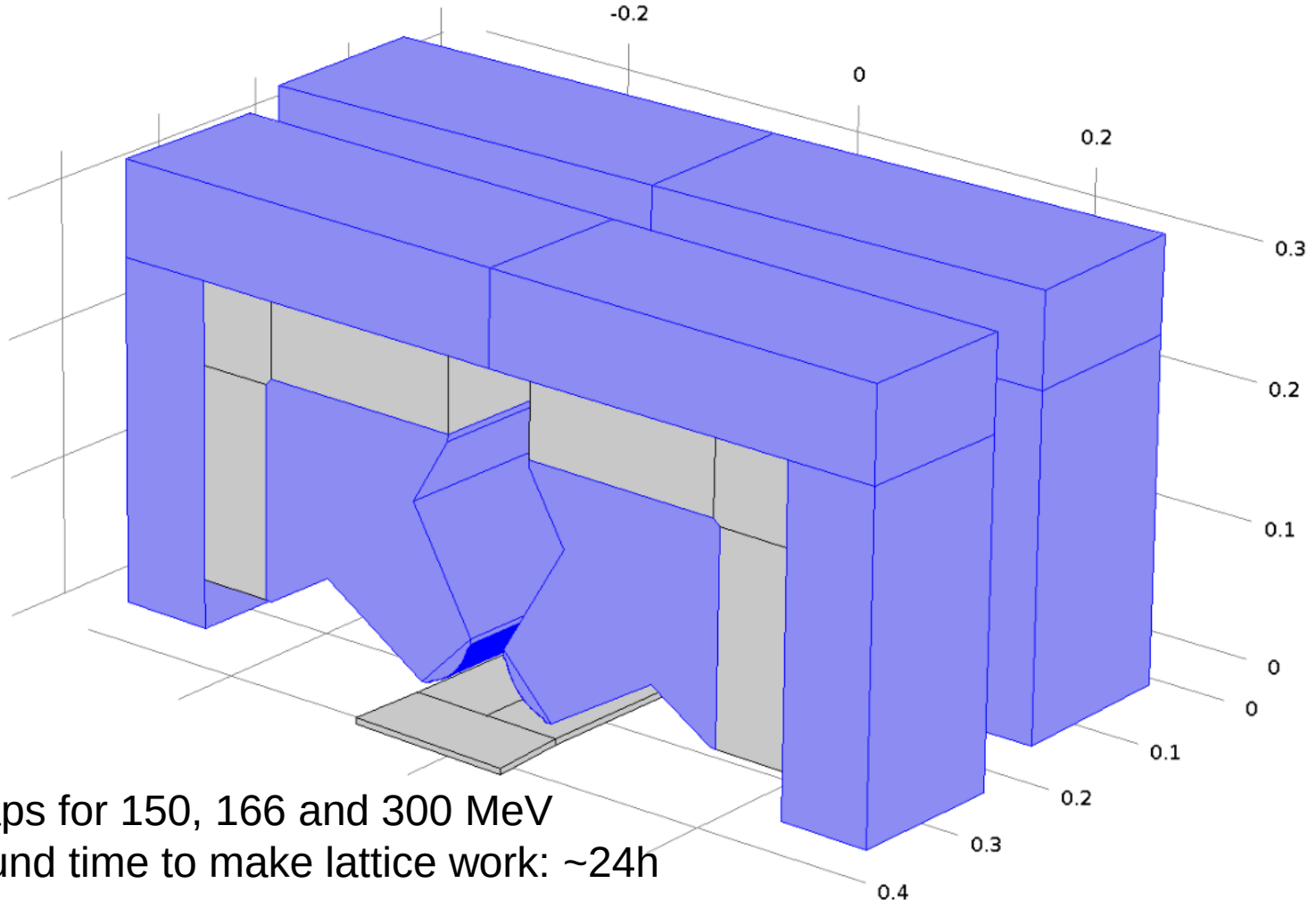




SiFe: no change in gradient or quality

3D Tracking

See Scott's talk…

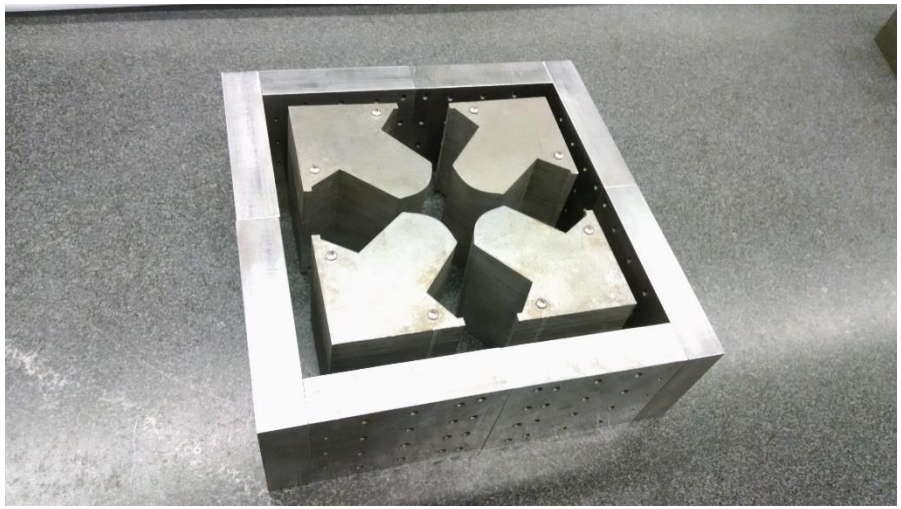


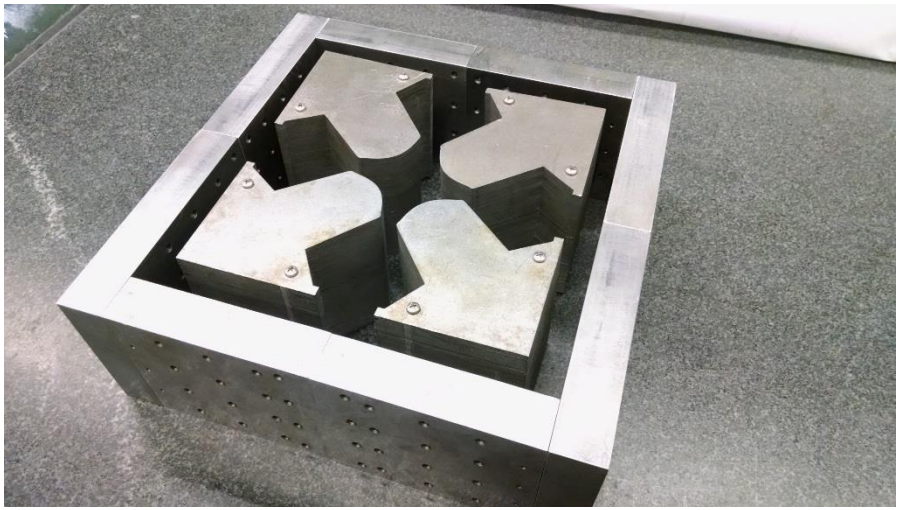
Field maps for 150, 166 and 300 MeV
Turnaround time to make lattice work: ~24h

Status Demonstrator

Delays: customs / clearance

Yokes have arrived



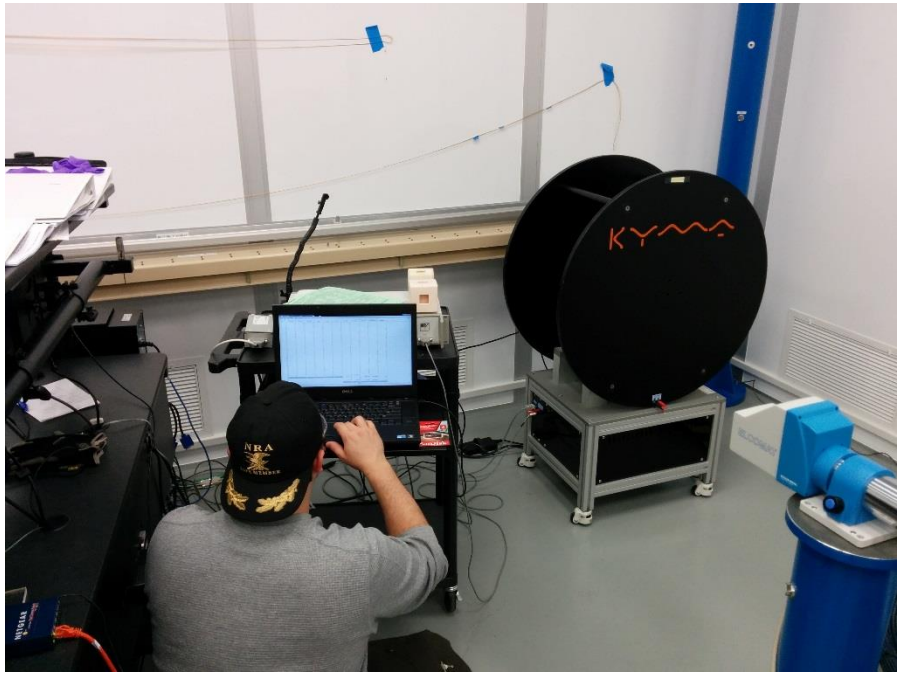


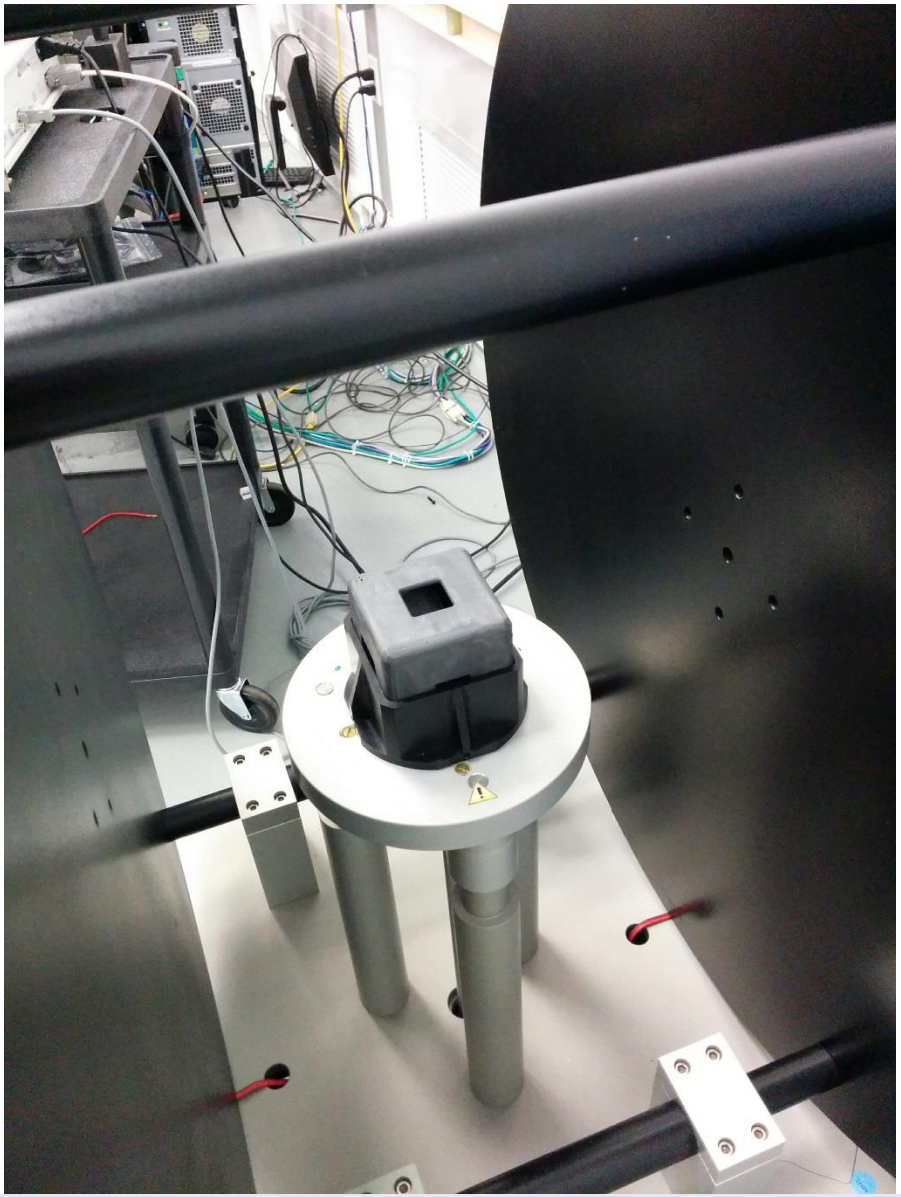
Poles: laminations prepared by wire eroder

Permanent Magnets

- PMs: two suppliers
  - Vacuumschmelze
    - PMs measured by VAC
    - Procurement started beginning of February
    - Lead-time: 8-10 weeks
    - Updated shipping date: **June 2nd**
    - Exploring partial delivery / expedited shipping
  - Allstar Magnetics
    - At BNL
    - Not measured

BNL Insertion Devices Group
Helmholtz Coil

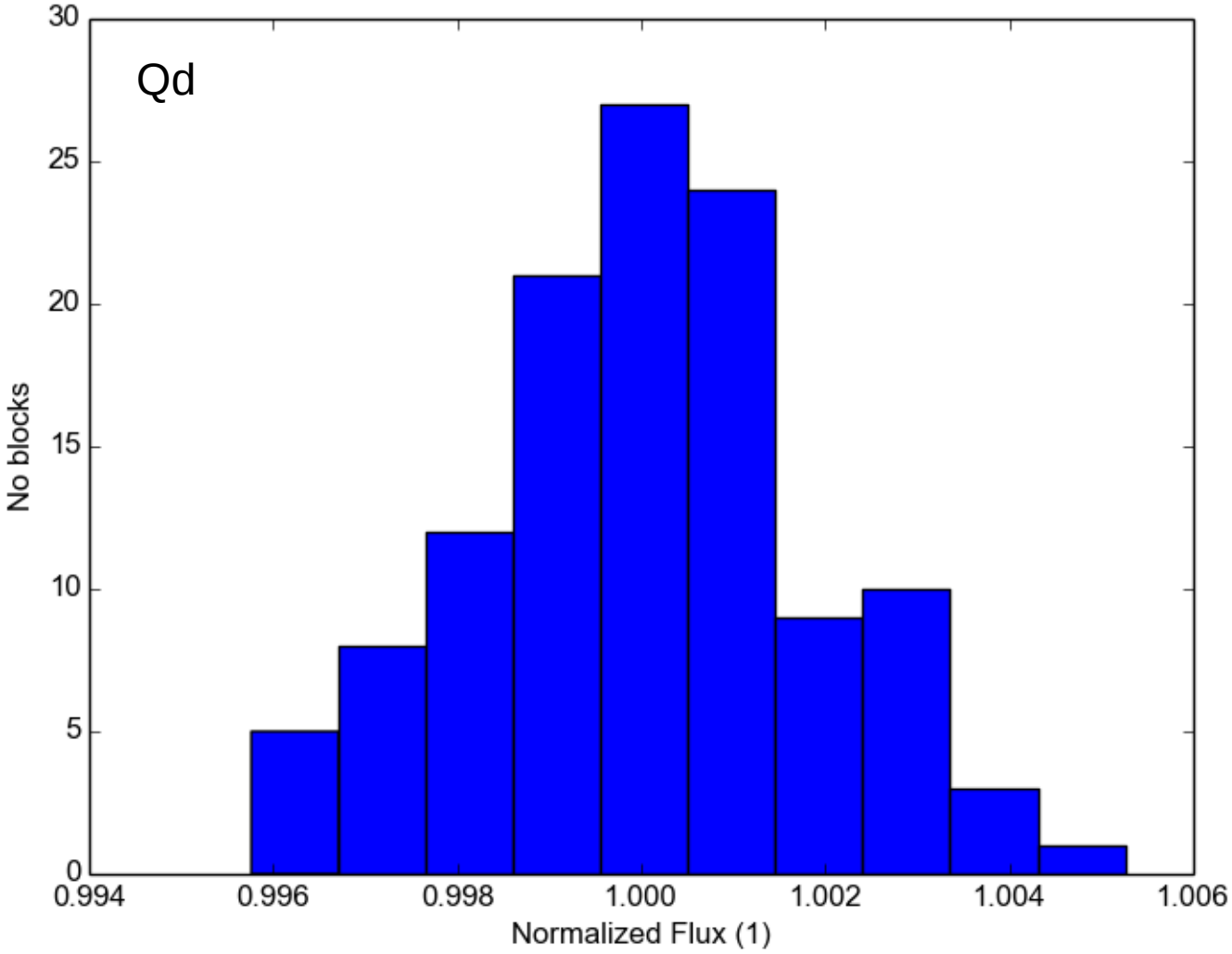




Thanks to Toshiya Tanabe & Chris Eng
Mike Anerella, Jesse, Ray + Mike

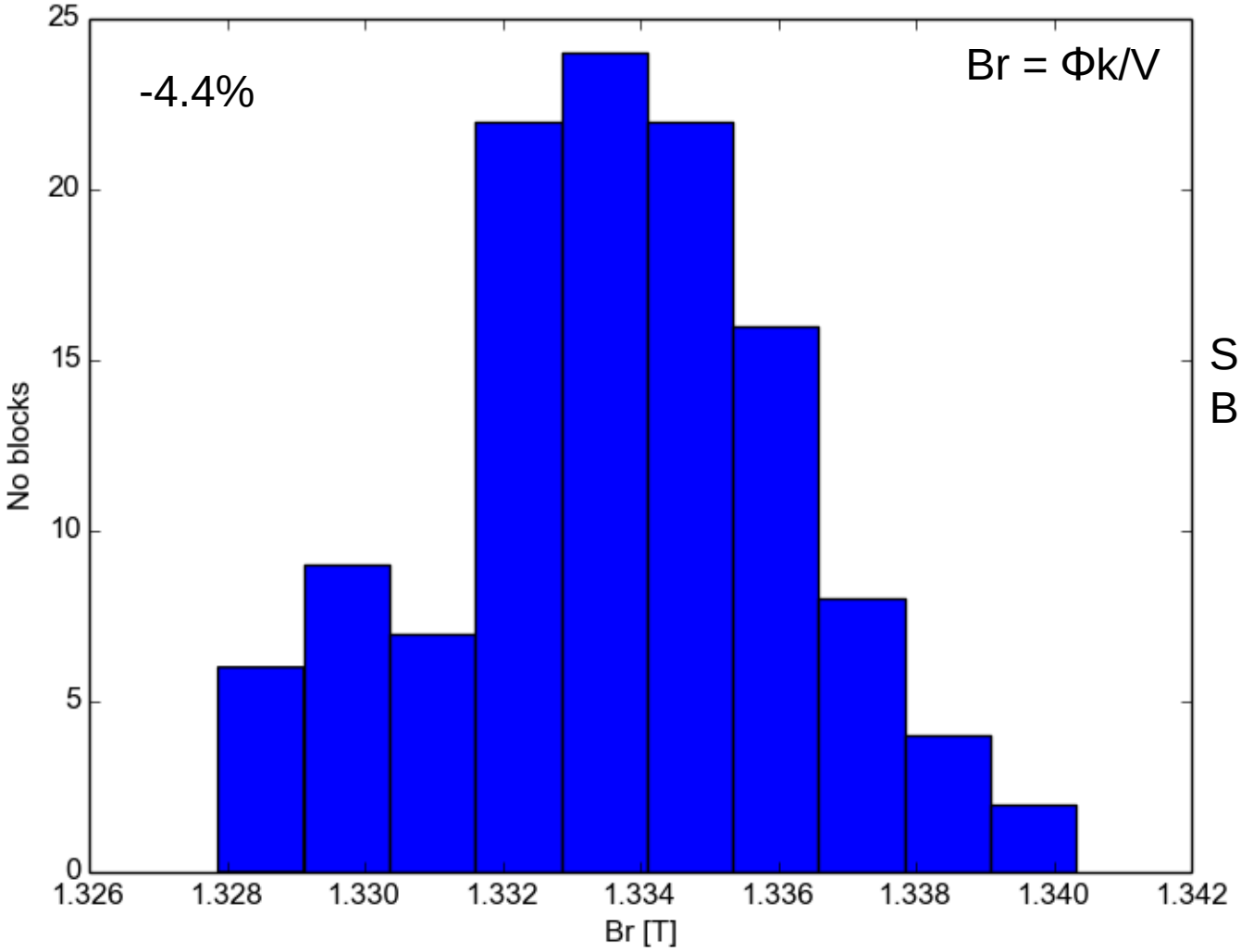
Flux Measurements

Absolute value?



Br Qd

Variation: +/-0.5%



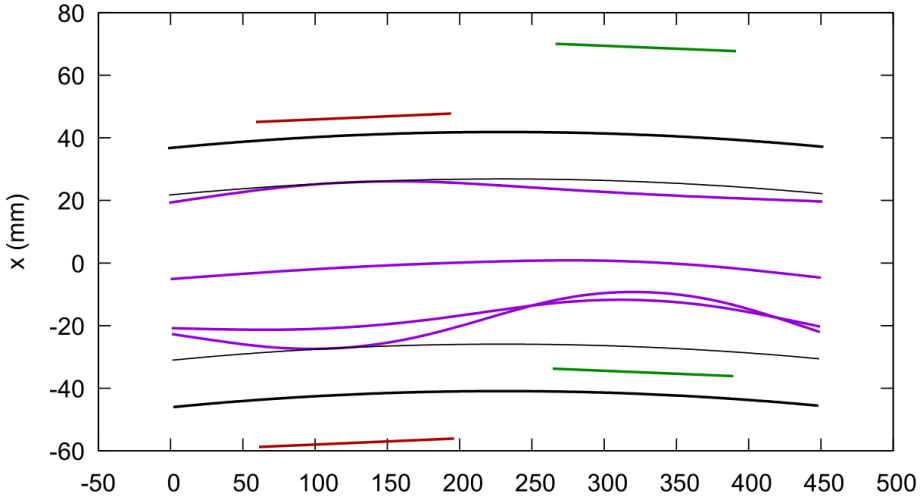
Spec:
Br=1.37..1.42T

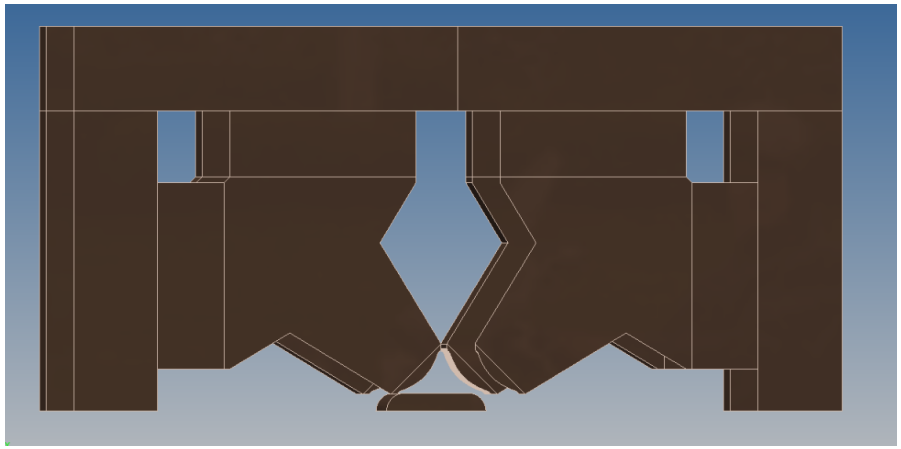
Matching of Blocks

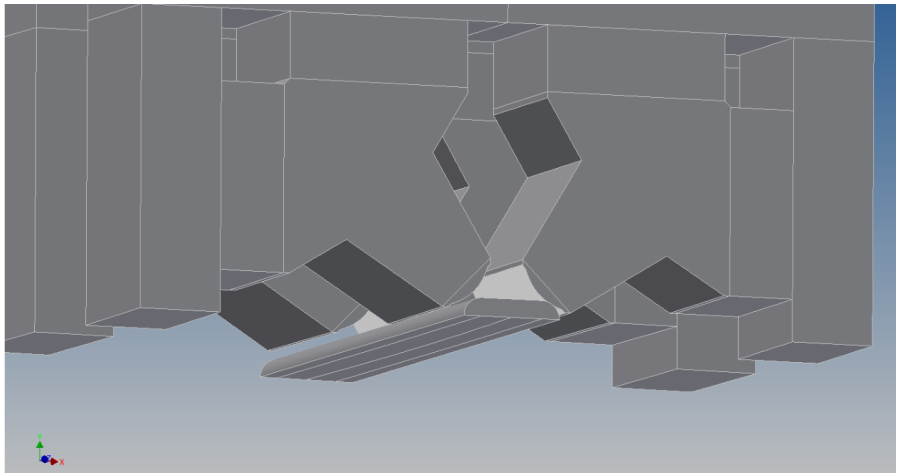
- Total pool Qd: 120 PMs
- Find four sets of 24 PMs each, which deliver same amount of flux
- Simple algorithm:
  - 100k iterations
  - Pick random blocks
  - Keep results if better than previous result
- Result:
  - 2.2848999+/- 9.36616250119e-06

Beam Pipe

Flat beam pipe allows correctors to be placed within magnets



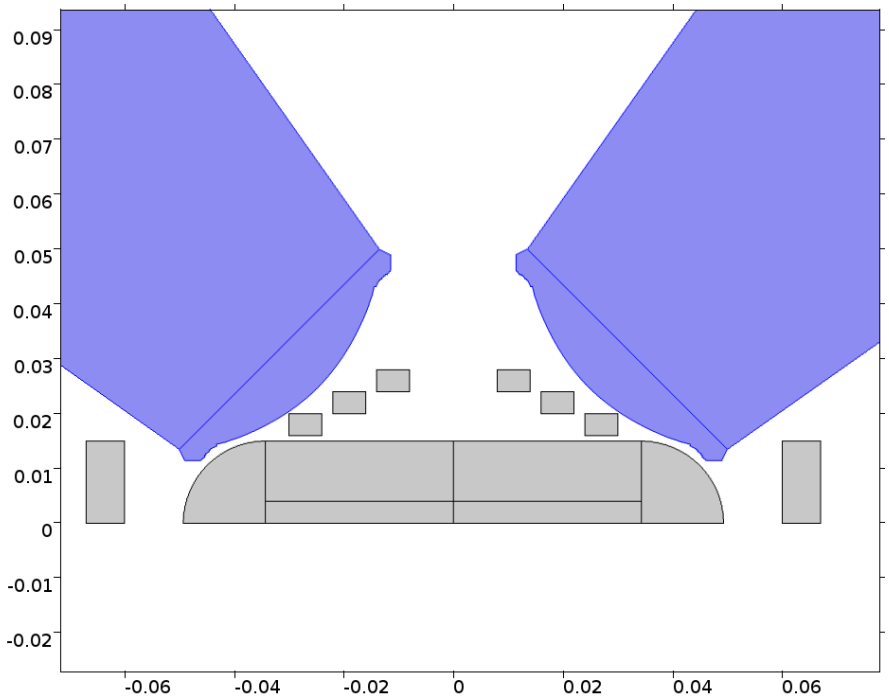




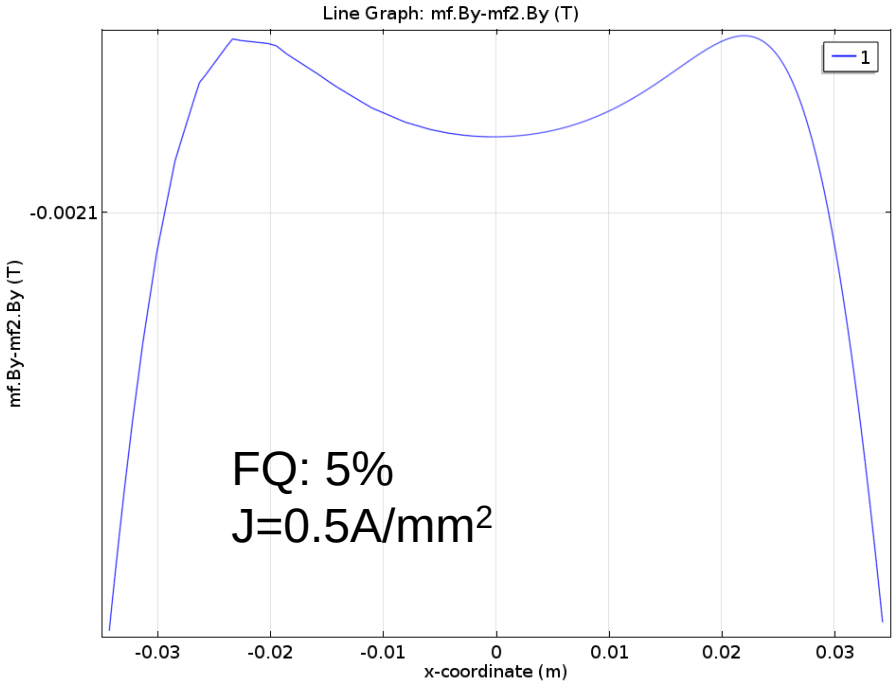
Dipole Corrector

Needs work

(Pole shape: superseded)



2.1mT eq. to 125 um displacement



FQ: 5%

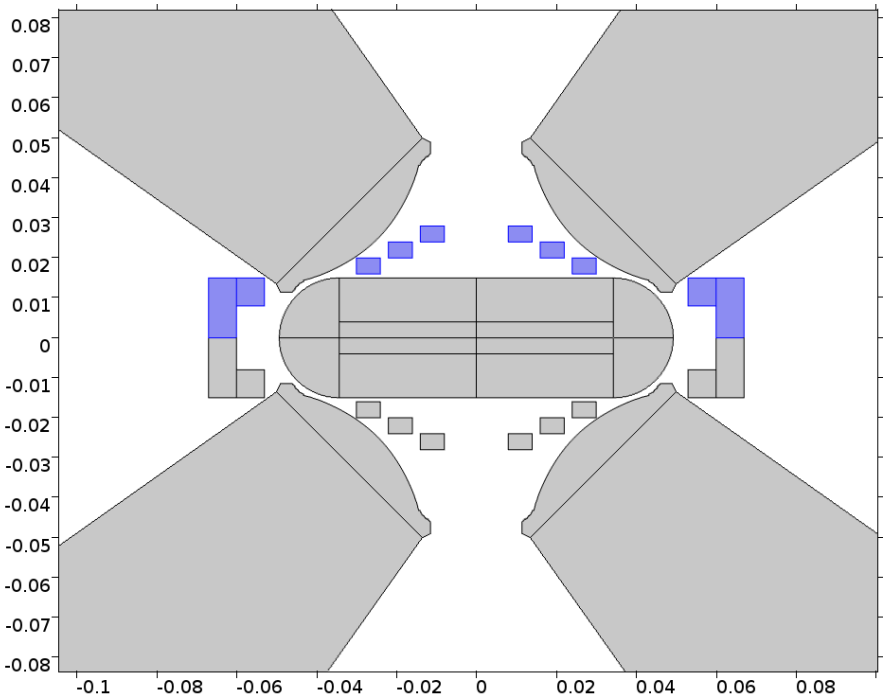
J=0.5A/mm^2

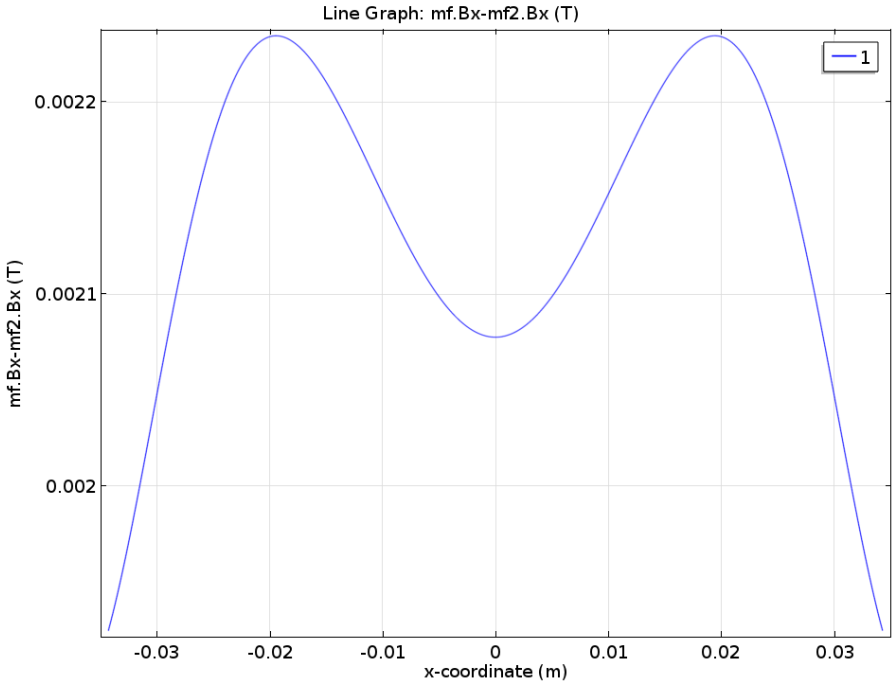
Gradient quality unaffected

P=3W/m

Skew Dipole

Needs work





J=1A/mm^2
FQ=15%

P=15W/m

To Do List

- Magnet design
  - Incorporate temperature compensation
  - Block sizes
  - Re-evaluate margin, re-iterate geometry
- Demonstrator
  - Assemble Qd
  - Measure blocks for Qf
  - Measure Qd/Qf separately